Docket No. 30011896-3 US (1509-258) PATENT

THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of	
Inventors: Lawrence Wilcock et al.	: Confirmation No. 3663
	:
U.S. Patent Application No. 10/058,052	: Group Art Unit: 2179
	:
Filed: January 29, 2002	: Examiner: Jordany NUNEZ
For: DISTINGUISHING REAL-WORLD SOUND FROM AUDIO USER INTERFACE SOUNDS	

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Attn: BOARD OF PATENT APPEALS AND INTERFERENCES

SUPPLEMENTAL BRIEF ON APPEAL

Further to the Appeal Brief filed April 6, 2007 and the Notice of Appeal filed February 6, 2007, in connection with the above-identified application on appeal, herewith is Appellant's Supplemental Brief on Appeal. The $500 statutory fee was paid on April 6, 2007.

To the extent necessary, Appellant hereby requests any required extension of time under 37 C.F.R. §1.136 and hereby authorizes the Commissioner to charge any required fees not otherwise provided for to Deposit Account No. 08-2025.

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I. Real Party in Interest

The real party in interest is Hewlett Packard Development Company, L.P., a Texas limited partnership.

II. Related Appeals and Interferences

An appeal was filed on March 7, 2007 for Serial No. 10/355,262, a continuation-in-part of this application.

III. Status of Claims

A. Total Number of Claims in Application

1. There is a total of 32 claims pending in the application, which are identified as claims 1-10, 12-30, 32 and 34-35.

B. Status of all the claims

1. Claims canceled – 11, 31 and 33
2. Claims withdrawn from consideration but not canceled – None
3. Claims pending – 1-10, 12-30, 32 and 34-35
4. Claims allowed – None
5. Claims rejected – 1-10 and 12-35

C. Claims on Appeal

Claims on appeal are claims 1-10, 12-30, 32 and 34-35.

IV. Status of Amendments

There was no amendment submitted after final rejection, except the amendment accompanying this Appeal Brief canceling claims 31 and 33. This Brief, including the claims appendix, is prepared on the assumption that this amendment will be entered.

V. Summary of Claimed Subject Matter

Independent claim 1 is directed to an audio user-interfacing method in which items, such as the voices of different people, are represented in an audio field by corresponding synthesized sound sources 40 (Figures 2, 6 and 16; page 9, line 4; page 17, line 23; Figure 16; page 34, lines 1-7). The audio field is described as a spherical surface, a portion of a spherical surface 41 (Figure 2; page 9, lines 2-7), a cylindrical surface, or a portion of a cylindrical surface 50 (Figure 6; page 17, lines 23-25). The sound sources are synthesized so they appear to emanate from particular locations in the audio field (page 9, lines 4-6; page 4, lines 27-29; page 59, lines 4-6).

The synthesized sound sources 40 are presented to a user by audio output devices 11 (Figure 1; page 9, line 29) that are described as a pair of fixed, spaced loudspeakers (page 9, lines 29, 30), a set of headphones (page 9, line 31) or a vehicle sound system (page 11, line 4). Thus, the user is able to hear real-world sounds from an environment where the user is located, as well as the synthesized sound sources (page 32, lines 26-28; page 4, line 30; page 59, line 6). Real-world sounds are sounds derived from real sound sources in the environment where the user is located and that are distinguished (that is, different) from the synthesized sound sources (page 1, lines 4, 5; page 32, lines 24-28).

To assist the user in distinguishing the sounds emanating from one or more of the synthesized sound sources 40, the user selectively applies a distinctive presentation effect, disclosed as a sound effect (as defined by claims 3, 14 and 23), to the sounds emanating from sound source(s) 40 (page 32, line 12-page 33 line 14; page 4, lines 30-page 5, line 2; page 59, lines 7-9). Exemplary sound effects are set forth in claims 4, 15 and 24 as being at least one of: volume modulation, pitch modulation, frequency shifting distortion, echo added noise, and added distinction sounds (page 32, lines 20-22; page 59, lines 25-32).

Independent claim 12, that includes means plus function limitations, is directed to an apparatus for providing an audio interface (Figure 10, page 22, lines 25, 26) in which items, such as the voices of different people, are represented in an audio field by corresponding synthesized sound sources 40 (Figures 2, 6 and 16; page 9, line 4; page 17, line 23; Figure 16; page 34, lines 1-7). The audio field is disclosed as a spherical surface, or a portion of a spherical surface 41 (Figure 2; page 9, lines 2-7), a cylindrical surface, or a portion of a cylindrical surface 50 (Figure 6; page 17, lines 23-25). The sound sources are synthesized so they appear to emanate from particular locations in the audio field (page 9, lines 4-6; page 4, lines 27-29; page 59, lines 4-6).

A rendering-position determining means (a limitation under 35 USC 112, paragraph 6) includes (1) subsystem 13 comprising memory 14 that stores the identity and locations of the sound sources (page 11, line 30-page 12, line 4; page 14, lines 4-6), (2) real-world location processing block 21 that is responsive to an input 23 indicative of user location and the identities and locations of the sound sources, as derived from subsystem 13 (page 14 lines 4-14), and (3) memory 15 that stores the

rendering positions of sources 40 as determined, inter alia, by block 21 (page 15, lines 25-29). The rendering-position determining means determines, for each of sound sources 40, an associated rendering position at which the sound source is to be synthesized to sound in the audio field, as illustrated, for example, by sound sources 40 in Figures 4-8 and 13-16 (page 5, lines 16-18; page 61, lines 17-19).

A rendering means (a limitation under 35 USC 112, paragraph 6) includes (1) memory 15 for storing indications of the rendering positions of the sources (page 15, lines 25-29), (2) spatialization processor 10 (page 16, lines 1-5) and (3) audio output devices 11 in the form of a pair of fixed, spaced loudspeakers (page 9, lines 29, 30), a set of headphones (page 9, line 31), or a vehicle sound system (page 11, line 4). The rendering means generates an audio field in which sound sources 40 are synthesized at their associated rendering positions (Figures 4-8 and 13-16; page 5, lines 19, 20; page 61, lines 20, 21). The fixed, spaced loudspeakers, set of headphones or vehicle sound system that form the audio output devices 11 are such as to permit the user also to hear real-world sounds from an environment where the user is located (page 5, lines 20 1, 22; page 61, lines 22, 23). Real-world sounds are sounds derived from real sound sources in the environment where the user is located and that are distinguished (that is, different) from the synthesized sound sources (page 1, lines 4, 5; page 32, lines 24-28).

To assist the user in distinguishing the sound emanating from one or more of sources 40 from the real-world sounds, distinctive-presentation means (a limitation under 35 USC 112, paragraph 6) in the form of sound setter 84, Figure 10, selectively applies, under user control, a distinctive presentation effect, in the form of a sound

effect (as dependent claim 14 requires) to at least one of sound sources 40 (page 32, lines 12-32; page 5, lines 23-26; page 61, lines 24-27). The sound effect is at least one of volume modulation, pitch modulation, frequency shifting distortion, echo added noise, and added distinction sounds (page 32, lines 20-22), per dependent claim 15.

Independent apparatus claim 21 is similar to independent apparatus claim 12, but claim 21 does not include means plus function limitations. Independent claim 21 is directed to an apparatus for providing an audio interface (Figure 10, page 22, lines 25, 26) in which items, such as the voices of different people, are represented in an audio field by corresponding synthesized sound sources 40 (Figures 2, 6 and 16; page 9, line 4; page 17, line 23; Figure 16; page 34, lines 1-7). Examples of the audio field are a spherical surface, a portion of a spherical surface 41 (Figure 2; page 9, lines 2-7), a cylindrical surface, or a portion of a cylindrical surface 50 (Figure 6; page 17, lines 23-25). The sound sources are synthesized so they appear to emanate from particular locations in the audio field (page 9, lines 4-6; page 4, lines 27-29; page 59, lines 4-6).

A rendering-position determining arrangement includes (1) subsystem 13 comprising memory 14 that stores the identity and locations of the sound sources (page 11, line 30-page 12, line 4; page 14, lines 4-6), (2) real-world location processing block 21 that is responsive to an input 23 indicative of user location and the identities and locations of the sound sources, as derived from subsystem 13 (page 14 lines 4-14), and (3) memory 15 that stores the rendering positions of sources 40 as determined, inter alia, by block 21 (page 15, lines 25-29). The rendering-position determining arrangement is operative to determine, for each of sound sources 40, an associated rendering position at which the sound source is to be synthesized to sound

in the audio field, as illustrated, for example, in Figures 4-8 and 13-16 (page 5, lines 16-18; page 61, lines 17-19).

A rendering subsystem includes (1) memory 15 for storing indications of the rendering positions of the sources (page 15, lines 25-29), (2) spatialization processor 10 (page 16, lines 1-5) and (3) audio output devices 11 in the form of a pair of fixed, spaced loudspeakers (page 9, lines 29, 30), a set of headphones (page 9, line 31), or a vehicle sound system (page 11, line 4). The rendering subsystem generates an audio field in which sound sources 40 are synthesized at their associated rendering positions (Figures 4-8 and 13-16; page 5, lines 19, 20; page 61, lines 20, 21). The fixed, spaced loudspeakers, set of headphones or vehicle sound system that are included in the audio output devices 11 are such as to permit the user also to hear real-world sounds from an environment where the user is located (page 5, lines 20 1, 22; page 61, lines 22, 23). Real-world sounds are sounds derived from real sound sources in the environment where the user is located and that are distinguished (that is, different) from the synthesized sound sources (page 1, lines 4, 5; page 32, lines 24-28).

To assist the user in distinguishing the sound emanating from one or more of sources 40 from the real-world sounds, distinctive-presentation arrangement including sound setter 84, Figure 10, selectively applies, under user control, a distinctive presentation effect.

Dependent claim 23 requires sound setter 84 to apply the distinctive presentation effect as a sound effect (page 32, lines 12-32; page 5, lines 23-26; page 61, lines 24-27). The sound effect is at least one of volume modulation, pitch

modulation, frequency shifting distortion, echo added noise, and added distinction sounds (page 32, lines 20-22), per dependent claim 24.

VI. Grounds of Rejection to be Reviewed on Appeal

The anticipation rejection of Claims 1, 3, 4, 12, 14, 15, 21, 23 and 24, based on Courneau et al., USP 5,987,142, is to be reviewed. The remaining claims rise and fall with the claims upon which they depend.

VII. Argument

A. Courneau et al.

Courneau et al. is primarily concerned with providing synthesized sounds to the headphones of persons in the very noisy environment of a fighter aircraft; col. 1, lines 8-12; col. 2, lines 2 and 3. The environment is so noisy that the pilot of the aircraft can not hear any real-world sounds. This is indicated by the fact that the pilot hears the voice of his co-pilot by way of spatialization module 1, that causes the voice of the co-pilot to appear to the pilot of the aircraft as if the co-pilot were actually behind the pilot; col. 2, lines 13-21.

Spatialization module 1 is responsive to memory card 16 that stores personalization data indicative of the hearing characteristics of the ears of the person (i.e., subject) wearing stereophonic headphones responsive to the spatialization module 1; col. 3, lines 47-67; col. 1, lines 39-52. The personalization data for a particular subject are collected by the apparatus illustrated in Figure 4. The method of collecting the personalization data is described in col. 5, lines 1-67, and includes, *inter alia*, positioning the subject in such a way that his ears are located at the positions of the pair of reference microphones at center 32 of a sphere including loud speaker 31, to which the subject responds. A database of transfer functions for the hearing

characteristics of the ears of the subject is formed either by pairs of frequency responses resulting from the measurements or by pairs of pulse responses that are reversed Fourier transforms of the frequency responses; column 5, lines 41-46.

To make the rejection the Examiner has taken snippets from the Courneau et al. disclosure out of context and has misconstrued them.

The office action, on page 2, penultimate subparagraph, relies on column 3, lines 35-41 of Courneau et al to indicate the user of the Courneau et al synthesizer hears threats and warnings as real-world sounds. However, this portion of Courneau et al indicates management of resources device 12 of spatialization module 1 manages sources to be spatialized. Column 2, lines 13-18 of Courneau et al indicates spatialization module 1 has the role of making sound signals heard through stereophonic headphones to be perceived by the listener as if they came from a particular point of space. Hence, the threats and warnings referred to in column 3, lines 35-41 are supplied to the user as sounds heard through stereophonic headphones, not as real-world sounds.

The office action, on page 2, last subparagraph, states the "personalization" referred to by Courneau et al at column 3, lines 35-41 is to be construed as selectively applying, under user control, a distinctive presentation of the effect to item-related sounds emanating from a group of at least one synthesized sound source. This is completely wrong. As discussed supra, Courneau et al refers to "personalization" in connection with the hearing characteristics of the ears of the subject who is wearing the headphones. Hence, "personalization" has nothing to do with item-related sounds,

no less applying a distinctive presentation effect to item-related sounds emanating from a synthesized sound source.

Page 3 of the office action, in discussing claim 3, states the convolution filters mentioned at column 4, lines 64-67 of Courneau et al constitute a sound effect. In fact, this portion of Courneau et al indicates the convolution filters are "personalized" convolution filters prepared on the basis of measurements using the method described in connection with Figure 4. As discussed supra, Figure 4 is concerned with obtaining data about the hearing characteristics of the ears of the subject. Thus, the convolution filters referred to in the office action have nothing to do with sound effects that are applied to item-related sounds emanating from a synthesized sound source.

Page 4 of the office action, in discussing claims 4, 15 and 24, relies on column 5, lines 41-46 of Courneau et al to indicate the sound effect is at least one of volume modulation, pitch modulation, frequency shifting, distortion echo, added noise, and added distinction sounds. Column 5, lines 41-45 of Courneau et al has nothing to do with sound effects, no less any of the foregoing types of sound effect. Instead, this portion of Courneau et al indicates the transfer of functions that represent the hearing characteristics of the ears of the subject who is to wear the headphones can include either pairs of frequency responses or pairs of pulse responses.

B. The Anticipation Rejection of Claim 1 Is Wrong

The office action incorrectly relies on column 3, lines 35-41 of Courneau et al. to disclose the feature of a user being able to hear real-world sounds from an

environment where the user is located. However, there is nothing in column 3, lines 35-41 indicating that the user of the Courneau et al. apparatus is able to hear real-world sounds. This portion of the reference only discusses sounds, such as threats and warnings, the subject who is wearing the headphones discussed in column 2, lines 12-16 is able to hear as result of the management by device 12 of the spatialization module 1 of the n sound sources to be spatialized. There is nothing in Courneau et al to indicate the threats and warnings are real-world sounds.

The office action also states that the "personalization" discussed at column 3, lines 35-41 of Courneau et al. is a distinctive presentation effect that is applied to item-related sounds emanating from at least one synthesized sound source. As discussed supra, the "personalization" discussed at column 3, lines 35-41 refers to the hearing characteristics of the subject who is wearing the headphones discussed in the Courneau et al reference. The hearing characteristics of the subject are not applied as a distinctive presentation effect to item-related sounds emanating from synthesized sound source 24, Figure 3, to assist the subject who is wearing the headphones in distinguishing the sounds emanating from sound source 24 from real-world sounds. The personalization effects enable the subject who is wearing the headphones of Courneau et al to more accurately hear the sounds associated with the signal 24 to be spatialized.

The reliance on column 3, lines 24-28 with regard to the requirement of claim 1 relating to assisting the user in distinguishing the sounds emanating from a sound source from real world sounds is nonsense. Column 3, lines 24-28 refers to

simultaneously spatializing n2 distinct sources at n2 distinct points in space (where n2 is equal to or less than n).

The comment in the last two lines of page 2 that "any one sound can be distinguished from another, including real-world sounds from synthesized ones" is not germane. There is nothing in Courneau et al to indicate the user of the apparatus disclosed therein can hear any real-world sounds. Claim 1 indicates the distinctive presentation effect that assists the user in distinguishing sound source sounds from real-world sounds is **applied** to the item related sounds. Certainly such a feature is not found in Courneau et al.

C. Claims 3, 14 and 23 Require the Distinctive Presentation Effects of Claims 1, 12 and 21 to Be a Sound Effect

To reject the requirement of claims 3, 14 and 23 for the distinctive presentation effect of claims 1, 12 and 21 to be a sound effect, the examiner relies on the disclosure by Courneau et al at column 4, line 64-67 of convolution filters. The convolution filters of Courneau et al represent the transfer functions of the ears of the subject who is wearing the headphones; column 5, lines 41-46. Such transfer functions have nothing to do with a sound effect that is a distinctive presentation effect that assists in enabling a user to distinguish sounds emanating from a sound source from real-world sounds.

D. Claims 4, 15 and 24 Require the Sound Effect of Claims 3, 14 and 23 to Be At Least One of Volume Modulation, Pitch Modulation, Frequency Shifting, Distortion Echo, Added Noise, and Added Distinction Sounds.

To reject the requirement of claims 4, 15 and 24 for the sound effect of claims 3, 14 and 23 to be at least one of volume modulation, pitch modulation, frequency shifting, distortion echo, added noise, and added distinction sounds, the examiner relies on column 5, lines 41-46 of Courneau et al. This portion of Courneau et al indicates the transfer functions associated with the hearing capabilities of the ears of the subject who is wearing the headphones can be represented by pairs of frequency responses or by pairs of pulse responses. Such transfer functions have nothing to do with sound effects that are distinctive presentation effects that assist in enabling a user to distinguish sounds emanating from a sound source from real-world sounds.

E. The Examiner Has Not Considered Many of the Limitations of Independent Apparatus Claim 12

The means plus function clauses of claim 12 are obviously intended to be construed in accordance with 35 USC 112, paragraph 6, because of the similarity of the language between claims 12 and 21. Claim 21 does not include means plus function language, but is otherwise similar to claim 12.

Because the rendering-position determining means of claim 12 is a limitation under 35 USC 112, paragraph 6, the examiner must show where Courneau et al discloses structure that corresponds or is equivalent to the structure for the rendering-position determining means described in appellants' specification. Appellants'

specification indicates the rendering-position determining means includes (1) subsystem 13 comprising memory 14 that stores the identity and locations of the sound sources (page 11, line 30-page 12, line 4; page 14, lines 4-6), (2) real-world location processing block 21 that is responsive to an input 23 indicative of user location and the identities and locations of the sound sources, as derived from subsystem 13 (page 14 lines 4-14), and (3) memory 15 that stores the rendering positions of the sound sources as determined, inter alia, by block 21 (page 15, lines 25-29). The rendering-position determining means determines, for each of the sound sources, an associated rendering position at which the sound source is to be synthesized to sound in the audio field. The specification states the audio field is a sphere, a portion of a spherical surface, a cylinder or a portion of a cylindrical surface (page 9, lines 1-3; page 17, lines 23, 24). Because the office action fails to indicate where Courneau et al discloses all the foregoing structures of the rendering-position determining means, the rejection of claim 12 is incorrect.

To meet the claim 12 rendering means limitation that is under 35 USC 112, paragraph 6, the examiner must show where Courneau et al discloses structure that corresponds or is equivalent to appellants' (1) memory 15 for storing indications of the rendering positions of the sound sources (page 15, lines 25-29), (2) spatialization processor 10 (page 16, lines 1-5) and (3) audio output device 11 in the form of a pair of fixed, spaced loudspeakers (page 9, lines 29, 30), or a set of headphones (page 9, line 31), or a vehicle sound system (page 11, line 4). The rendering means generates an audio field in which the sound sources are synthesized at their associated rendering positions (Figures 4-8 and 13-16; page 5, lines 19, 20; page 61, lines 20,

21). The fixed, spaced loudspeakers, set of headphones or vehicle sound system that form the audio output device 11 are such as to permit the user also to hear real-world sounds from an environment where the user is located (page 5, lines 20 1, 22; page 61, lines 22, 23). Real-world sounds are sounds derived from actual sound sources in the environment where the user is located and that are distinguished (that is, different) from the synthesized sound sources (page 1, lines 4, 5; page 32, lines 24-28). Because the office action fails to indicate where Courneau et al discloses all the foregoing structures of the rendering means, the rejection of claim 12 is incorrect.

While Courneau et al indicates headphones are employed, there is nothing to indicate the headphones enable the user thereof to hear real-world sounds. In fact, the inference is that the user can not hear real-world sounds because a pilot who is using the apparatus Courneau et al discloses can not directly hear his copilot who is sitting behind him, but hears the voice of the copilot through spatialization module 1 and headphones; column 2, lines 13-21.

Claim 12 indicates the user is assisted in distinguishing the sound emanating from one or more of the sound sources from the real-world sounds by use of distinctive-presentation means. The distinctive-presentation means limitation under 35 USC 112, paragraph 6 corresponds to sound setter 84, Figure 10, that selectively applies, under user control, a distinctive presentation effect, in the form of a sound effect (as dependent claim 14 requires) to at least one of the sound sources (page 32, lines 12-32; page 5, lines 23-26; page 61, lines 24-27). The sound effect is at least one of volume modulation, pitch modulation, frequency shifting distortion, echo added noise, and added distinction sounds. Because the office action fails to indicate where

Courneau et al discloses all the foregoing structures of the distinctive-presentation means, the rejection of claim 12 is incorrect.

The rejection of claim 12 is incorrect for the reasons set forth above in connection with claim 1 since claim 12 requires audio output devices that permit a user to hear real-world sounds from an environment where the user is located, as well as sound sources that are synthesized at their associated rendering positions. The examiner incorrectly relies on the same portion of Courneau et al, that is, column 3, lines 35-45, for this feature as was incorrectly relied on in connection with the similar feature in claim 1. Claim 12 also requires a distinctive presentation effect to be applied to item related sounds emanating from a synthesized sound source to assist the user in distinguishing the item related sounds from the real world sounds. The examiner incorrectly relies on column 3, lines 24-28 of Courneau et al in connection with this limitation. The above discussion in connection with claim 1 indicates column 3, lines 24-28 has nothing do with this limitation.

F. Courneau et al Does Not Anticipate Claim 21

Claim 21 requires the audio output devices to be such as to permit a user to hear real-world sounds from an environment where the user is located. The office action again points to column 3, lines 35-45. However, there is nothing in this portion of Courneau et al that describes any aspect of the headphones that the subject wears. As discussed supra, the threats and warnings come to the subject by way of spatialization module 1 and the headphones, not as a result of real-world sounds, that

is, sounds that go directly to the ears of the subject without going through a synthesizer.

Claim 21 also requires a distinctive-presentation arrangement that is operative to selectively apply, under user control, a distinctive presentation effect to the item-related sounds emanating from a synthesized sound source to assist the user in distinguishing the sounds from a synthesized sound source from the real-world sounds. To meet this structural limitation, the office action relies on column 3, lines 23-30 and 35-45 of Courneau et al.

The only structure discussed in column 3, lines 23-30 concerns orienting device 13 that is illustrated in Figures 1 and 3 as being responsive to the head attitude, attitude of the source and attitude of the "weaver" (sic; apparently wearer) to enable an output to be derived indicative of the position of the sound source in relation to the head of the wearer of the headphones.

The structures mentioned in column 3, lines 35-45 consist of (1) device 12 that manages the sound sources to be spatialized, (2) bus 2 that supplies to device 12 information elements concerning the sources to be spatialized and the criteria for personalizing the hearing characteristics of the ears of the subject and priority information, such as threats and warnings, and (3) inertial unit 4 that supplies device 12 with information about changes taking place in the location of some or all of the sound sources that are being spatialized. Device 12 uses all of the foregoing information to select one or more sources to be spatialized. There is no disclosure of device 12 applying a distinctive presentation effect to the synthesized sounds that

Courneau et al derives, wherein the distinctive presentation effect assists the subject who is wearing the headphones in distinguishing sounds from the synthesized sound sources from real-world sounds. Figure 3 and the remainder of the disclosure of Courneau et al clearly indicate the only changes that are made to the sound signals the Courneau et al synthesizer generates relate to (1) the relative positions of the sound sources and the ears of the subject and (2) the hearing characteristics of the ears of the subject.

From the above, there is nothing whatsoever in column 3, lines 23-30 and 35-45 of Courneau et al disclosing the requirement of claim 21 for a distinctive-presentation arrangement that is operative to selectively apply, under user control, a distinctive presentation effect to the item-related sounds emanating from a synthesized sound source to assist the user in distinguishing the synthesized sounds from the real-world sounds.

G. Appellants' Reply to the "Response to Arguments" on Pages 10 and 11 of the Final Rejection

The germane portion of the "Response to Arguments" appears in the penultimate and antepenultimate paragraphs on page 11 of the final rejection. Appellants have, in Section VII.H of this brief, adequately dealt with the statements in the first two sentences of the antepenultimate paragraph on page 11 dealing with column 3, lines 35-45.

The statement in the last sentence of the antepenultimate paragraph on page 11 of the final rejection is based on twisted, illogical rationale. This statement is:

"Furthermore, Courneau does not teach that a user is prevented from hearing real-world sounds from an environment where the user is located, therefore Courneau inherently teaches a user being able to hear real-world sounds." The illogical rationale is that because Courneau et al does not teach a particular feature, Courneau et al inherently teaches that feature. This is similar to saying that because Einstein's theory of special relativity was not taught prior to Einstein setting forth the theory, the theory must have been known. Such logic is beyond the pale.

The first sentence of the penultimate paragraph on page 11 of the final rejection states: "Furthermore, Applicant does not define what a real-world sound and how it is different from a synthesized sound (sic)." One of ordinary skill in this art would clearly understand from their knowledge of the art that a real-world sound is not a synthesized sound. The very first sentence of appellants' application states the invention relates to distinguishing real-world sounds from sounds produced by an audio user interface. Page 32, lines 24-26, indicates the apparatus makes it easy to distinguish the synthesized sound sources from real sound sources in an environment. Based on the foregoing, one of ordinary skill in the art who reads appellants' disclosure would certainly understand that the real-world sounds are sounds that are coupled to the user's ears via a path that does not include audio output devices 11 of Figure 1.

The examiner's comment that the voice of the copilot is a real-world sound is wrong. Courneau et al clearly indicates, at column 2, lines 13-21, that the copilot's voice comes to the pilot by way of spatialization module 1, thence by way of stereophonic headphones. In this regard, Courneau et al states "the pilot of an aircraft hears the voice of his copilot **as if it is actually** coming from behind him (emphasis

added)." If the pilot heard the voice of the copilot directly, without the aid of spatialization module 1, there would be no statement in connection with the spatialization module at column 2, lines 13-21 about the voice of the copilot. In addition, column 2, lines 13-21 would not have used the words "as if he is actually coming from behind him."

The comment about "personalization" in the last sentence of the penultimate paragraph on page 11 of the final rejection shows that the examiner completely misunderstands what Courneau et al means in connection with "personalization." This sentence indicates the examiner believes "personalization," as discussed by Courneau et al, is a real-world sound. As discussed supra, Courneau et al uses "personalization" in conjunction with the hearing characteristics of the subject. This misunderstanding exemplifies the examiner's handling of this application.

H. Conclusion

Reversal of the rejection is in order.

Respectfully submitted,

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VIII. Claims Appendix

1. An audio user-interfacing method in which items are represented in an audio field by corresponding synthesized sound sources from where sounds related to the items appear to emanate, ; the method including while the user is able to hear real-world sounds from an environment where the user is located selectively applying, under user control, a distinctive presentation effect to the item-related sounds emanating from at least one synthesised sound source whereby to assist the user in distinguishing the sounds emanating from the at least one sound source from said real-world sounds.

2. A method according to claim 1, wherein the at least one sound source is associated with an audio-field reference relative to which the at least one sound source is positioned, the audio-field reference being offset relative to a presentation reference determined by a mounting configuration of audio output devices used to synthesise said at least one sound source such as to world stabilise the audio-field reference as the user moves; the at least one sound source representing a corresponding augmented reality service that has an associated real-world location, and the at least one sound source being positioned relative to the audio field reference such that for a user located in a notional reference position, the at least one sound source lies in the same direction as the associated real-world location.

3. A method according to claim 1, wherein said distinctive presentation is a sound effect.

4. A method according to claim 3, wherein said sound effect is at least one of: volume modulation pitch modulation frequency shifting distortion echo added noise added distinction sounds.

5. A method according to claim 1, wherein the at least one sound source is associated with an audio-field reference relative to which the at least one sound source is positioned and moving the audio-field reference relative to a presentation reference determined by a mounting configuration of audio output devices used to synthesise said sound sources such as to impart a particular stabilisation to the audio-field reference as the user moves, this stabilisation giving said distinctive presentation to the at least one sound source.

6. A method according to claim 5, wherein the audio-field reference is head stabilised.

7. A method according to claim 5, wherein the audio-field reference has an underlying stabilization, the method further comprising periodically updating the

underlying stabilization, the audio-field reference between such updating having a stabilisation inherent to the presentation reference.

8. A method according to claim 5, wherein the at least one sound source represents an augmented reality service that has an associated real-world location, the at least one sound source being positioned relative to the audio field reference such that for a user located in a notional reference position, the sound source lies in the same direction as the associated real-world location.

9. A method according to claim 1, wherein there are plural synthesized sound sources, each sound source being associated with one of multiple audio-field references relative to which the associated sound sources are positioned, the method further comprising moving the audio-field references independently relative to a presentation reference determined by a mounting configuration of audio output devices used to synthesise said sound sources, with movement of a said audio-field reference relative to the presentation reference resulting in corresponding movement of the associated sound sources relative to the presentation reference; the user applying a selected one of the distinctive presentation effects to a group of sound sources associated with an audio-field reference by choosing all the sound sources of that group as a whole.

10. A method according to claim 1, wherein at least some of the items represented by the sound sources are audio labels for services, the method further including selecting a service by selecting the corresponding audio-label sound source.

12. Apparatus for providing an audio user interface in which items are represented in an audio field by corresponding synthesized sound sources from where sounds related to the items appear to emanate, the apparatus comprising:

- rendering-position determining means for determining, for each said sound source, an associated rendering position at which the sound source is to be synthesized to sound in the audio field;
- rendering means, including audio output devices, for generating an audio field in which said sound sources are synthesized at their associated rendering positions, the audio output devices being such as to permit the user also to hear real-world sounds from an environment where the user is located; and
- distinctive-presentation means for selectively applying, under user control, a distinctive presentation effect to the item-related sounds emanating from at least one synthesised sound source whereby to assist the user in distinguishing the item-related sounds from said real-world sounds.

13. Apparatus according to claim 12, wherein the rendering-position determining means comprises:

- means for setting the location of the at least one sound source relative to an audio-field reference;
- means for controlling an offset between the audio field reference and a presentation reference, the presentation reference being determined by a mounting configuration of the audio output devices; and
- means for deriving the rendering position of the at least one sound source based on its location relative to the audio-field reference and said offset;

the at least one sound source being arranged to provide sounds for a corresponding augmented reality service that has an associated real-world location, the rendering-position determining means being operative to world-stabilise the audio field reference and to position the at least one sound source relative to the audio field reference such that for a user located in a notional reference position, the at least one sound source lies in the same direction as the corresponding said real-world location.

14. Apparatus according to claim 12, wherein said distinctive presentation applied by the distinctive-presentation means is a sound effect.

15. Apparatus according to claim 14, wherein said sound effect is at least one of: volume modulation pitch modulation frequency shifting distortion echo added noise added distinction sounds.

16. Apparatus according to claim 12, wherein the rendering-position determining means comprises:

- means for setting the location of the at least one sound source relative to an audio-field reference;
- means for controlling an offset between the audio field reference and a presentation reference, the presentation reference being determined by a mounting configuration of the audio output devices; and
- means for deriving the rendering position of the at least one sound source based on its location relative to the audio-field reference and said offset;

the rendering-position determining means incorporating said distinctive-presentation means and being operative to impart a particular stabilisation to the audio-field reference as the user moves, this stabilisation giving said distinctive presentation to the at least one sound source.

17. Apparatus according to claim 16, wherein the audio-field reference is head stabilised.

18. Apparatus according to claim 16, wherein the audio-field reference has an underlying stabilisation to which it is periodically updated, the audio-field reference between such updating having a stabilisation inherent to the presentation reference.

19. Apparatus according to claim 16, wherein the at least one sound source is arranged to provide sounds for a corresponding augmented reality service that has an associated real-world location, the rendering-position determining means being operative to world-stabilise the audio field reference and to position the at least one sound source relative to the audio field reference such that for a user located in a notional reference position, the at least one sound source lies in the same direction as the corresponding said real-world location.

20. Apparatus according to claim 12, wherein there are plural sound sources, at least some of the said items represented by the sound sources are audio labels for services, the apparatus including a selection arrangement for enabling a user to select a service by selecting the corresponding audio-label sound source.

21. Apparatus for providing an audio user interface in which items are represented in an audio field by corresponding synthesized sound sources from where sounds related to the items appear to emanate, the apparatus comprising:

- a rendering-position determining arrangement operative to determine, for each said sound source, an associated rendering position at which the sound source is to be synthesized to sound in the audio field;
- a rendering subsystem, including audio output devices, arranged to generate an audio field in which said sound sources are synthesized at their associated

rendering positions, the audio output devices being such as to permit the user also to hear real-world sounds from an environment where the user is located; and

- a distinctive-presentation arrangement operative to selectively apply, under user control, a distinctive presentation effect to the item-related sounds emanating from at least one synthesised sound source whereby to assist the user in distinguishing the sounds from the at least one synthesized sound source from said real-world sounds.

22. Apparatus according to claim 21, wherein the rendering-position determining arrangement comprises:

- a setting arrangement for setting the location of the at least one sound source relative to an audio-field reference;
- a control arrangement for controlling an offset between the audio field reference and a presentation reference, the presentation reference being determined by a mounting configuration of the audio output devices; and
- a deriving arrangement operative to derive the rendering position of the at least one sound source based on its location relative to the audio-field reference and said offset;

the at least one sound source being arranged to provide sounds for a corresponding augmented reality service that has an associated real-world location, the rendering-position determining arrangement being operative to world-stabilise the audio field

reference and to position the at least one sound source relative to the audio field reference such that for a user located in a notional reference position, the at least one sound source lies in the same direction as the corresponding said real-world location.

23. Apparatus according to claim 21, wherein said distinctive presentation applied by the distinctive-presentation arrangement is a sound effect.

24. Apparatus according to claim 23, wherein said sound effect is at least one of:

- volume modulation
- pitch modulation
- frequency shifting
- distortion
- echo
- added noise
- added distinction sounds.

25. Apparatus according to claim 21, wherein the rendering-position determining arrangement comprises:

- a setting arrangement for setting the location of the at least one sound source relative to an audio-field reference;

- a control arrangement for controlling an offset between the audio field reference and a presentation reference, the presentation reference being determined by a mounting configuration of the audio output devices; and
- a deriving arrangement operative to derive the rendering position of the at least one sound source based on its location relative to the audio-field reference and said offset;

the rendering-position determining arrangement incorporating said distinctive-presentation arrangement and being operative to impart a particular stabilisation to the audio-field reference as the user moves, this stabilisation giving said distinctive presentation to the group of at least one sound sources.

26. Apparatus according to claim 25, wherein the audio-field reference is head stabilised.

27. Apparatus according to claim 25, wherein the audio-field reference has an underlying stabilisation to which it is arranged to be periodically updated, the audio-field reference between such updating having a stabilisation inherent to the presentation reference.

28. Apparatus according to claim 25, wherein the at least one sound source is arranged to provide sounds for a corresponding augmented reality service that has an associated real-world location, the rendering-position determining arrangement being

operative to world-stabilise the audio field reference and to position the at least one sound source relative to the audio field reference such that for a user located in a notional reference position, the at least one sound source lies in the same direction as the corresponding said real-world location.

29. Apparatus according to claim 21, wherein at least some of the said items represented by the sound sources are audio labels for services, the apparatus including a selection arrangement for enabling a user to select a service by selecting the corresponding audio-label sound source.

30. A method according to claim 1, wherein the user hears real-world sounds while the applying step is being performed.

32. A method according to claim 1, wherein the item related sounds are applied to loudspeakers.

34. Apparatus according to claim 12, wherein the audio output devices are loudspeakers.

35. Apparatus according to claim 21, wherein the audio output devices are loudspeakers.

IX. Evidence Appendix

None.

X. Related Proceedings Appendix

An appeal was filed on March 7, 2007 for Serial No. 10/355,262, a continuation-in-part of this application.